A CROSS-SEQUENTIAL STUDY OF AGE CHANGES IN PERSONALITY IN AN AGED POPULATION

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To my father and mother, to whom I am
grateful for the company of their years.

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The study of personality change in old age has been an area compromised by the inappropriate use of cross-sectional paradigms to investigate developmental age changes. In order to adequately address the question of what age changes in personality exist in a population of older individuals, a cross-sequential study with repeated measures was carried out with a sample of thirty-five Ss who ranged in age from 60 to 82 at the first time of testing, and were followed over a twelve-year period in conjunction with the Duke Longitudinal Study.

Indices of psychological rigidity, ego energy and interiority were examined by an application of Holt's Manual for the scoring of primary process manifestations in Rorschach responses, and Fisher and Cleveland's barrier score. Data were available for four cohorts (1881, 1885, 1890, 1895) at three times of measurement (1955, 1959, 1967), and were analyzed using a Ss/Cohort X Time analysis of variance.

The hypotheses that (1) psychological rigidity increases with age, (2) ego energy decreases with age and (3) interiority increases with age, were not supported by the results. Consistency in personality functioning was found with the measures of psychological rigidity and ego energy. In addition, an increased orientation of mastery toward an external situation was found. There were no significant differences between age change based on longitudinal data and estimates of age differences from cross-sectional paradigms, with the exception of the measure of interiority. The results are discussed in terms of the stability of personality functioning in older individuals associated with normal aging processes.

CHAPTER I
INTRODUCTION

With the tremendous strides that have been made in the past fifty years in health care and overall standard of living in the United States, we are witnessing a significant increase in the number of individuals who are 65 and over. The significance of the latter part of the life span lies not only in increasing numbers, but in the growing recognition of complex biological and social events which take place in old age such as bodily change, significant role alterations and eventual physical death. Thus, the question of how individuals in old age can be assisted in leading meaningful and fulfilling lives is of crucial psychological, social and medical importance.

Gerontology, as such, is a young field. Only in the past fifteen to twenty years has any large-scale systematic attention been devoted to understanding the nature of old age and the changes which take place as an individual ages. Even so, a recent review of the area (Schaie & Gribbin, 1975) revealed that most of the work to date has focused on issues of intellectual decline, changes in cognitive functioning and psychophysiological characteristics of older people. Understanding of adult personality development is still limited. The reasons are two-fold.

First, few major theories in the field of personality originally addressed themselves to gerontology, nor have they adequately extended their focus to include development in the latter half of the life span. A few exceptions exist. The most vital attempt in the 1960's was the theory of disengagement set forth by Henry and Cumming (1959) which proposed that as an individual ages, he actively seeks to disengage himself from his social roles and activities, becomes more internally preoccupied and is eventually free to die. This sequence of events was hypothesized to be a mutually rewarding and inherent process for both the individual and his society. Henry and Cumming's (1959) theory provided a framework and impetus for research in the past decade. Research was generated which addressed itself to the support or refutation of this theory (Cumming, Dean, Newell & McCaffrey, 1960; Davis, 1962; Dean, 1960; Palmore, 1968; Rosen & Neugarten, 1960; Zborowski & Eyde, 1962). As a result of this work, an alternative viewpoint toward aging was proposed which was called the activity theory (Palmore, 1968). The activity theory presented the view that successful aging was characterized not by withdrawal from society, but rather by the continuous maintenance of active and meaningful roles and relationships in life. These two theoretical viewpoints have constituted the major systematic efforts in the past decade to explain the process of aging. Recently, a third contribution has been made by Kohlberg (1973) who proposed an extension of his theory of moral development into old age. At this point in time, however, the issue between disengagement theory and activity theory appears to be a moot one (Siegler, 1974). Research supported the fact that disengagement does occur (Havighurst, 1968). However, disengagement is not ubiquitous, it is frequently not voluntary, and it may or may not be associated with life satisfaction and ratings of positive adjustment (Jeffers & Nichols, 1961; Havighurst, 1965, 1968). Other studies have found that a large degree of continuity in activity level exists from middle age to old age in a sample of normal aged individuals (Palmore, 1968), and that the maintenance of an active role is frequently associated with a high degree of life satisfaction and positive adjustment (Tobin & Neugarten, 1961; Palmore, 1968).

An additional explanation for the limited data base in the area of adult personality development is a methodological flaw which exists in a majority of studies in this area. Schaie (1970) has pointed to the serious error in using a cross-sectional design in which samples of different ages are studied at a single point in time, to investigate and draw conclusions about age changes. The cross-sectional design, when used alone, confounds ontogenetic change with generational change. Nevertheless, the delineation of ontogenetic or age change is a crucial step in developmental theory and research. Schaie and Marquette (1973) strongly argue that any results obtained from research using a cross-sectional paradigm should be discarded as artifact because of the unreliable nature of interpretation drawn in regard to the question of age change. To date, research on the question of what personality changes take place during aging has been seriously compromised by the methodological error of using cross-sectional designs. Only recently have several studies emerged which employed more sophisticated and adequate designs to explore personality change (Palmore, 1968; Schaie & Strother, 1968; Woodruff & Birren, 1972).

The importance of the question of personality change in old age should not be underestimated. The process which underlies successful aging is the process of adaptation; that is, the way in which an individual adjusts to life events which leads to a sense of integrity or despair according to Erikson (1963). A study of personality change within an individual is, in essence, a study of the process of adaptation. If one can understand the changes in personality organization which occur as an individual ages, one can be more alert to particular issues. These issues include the needs of older individuals, ways in which societal changes might serve as compensation for inherent changes in internal adaptation so that a rewarding life could be maintained in old age, and ways in which individuals with inferior or pathological adjustment could be helped to achieve a more positive adjustment. In addition, a sound and methodologically adequate investigation into the question of personality change and development could clarify the data base from which an adequate theory of personality in old age could be constructed.

Cross-Sectional Studies

A number of important findings on personality and old age have been reported in the literature. In general, when a cross-sectional design has been used, various studies have found aging to be associated with increased feelings of constriction (Cumming, Dean, Newell & McCaffrey, 1960), decreased ego energy (Rosen & Neugarten, 1960), decreased impulse control (Neugarten & Gutmann, 1964), increased introversion or interiority (Rosen & Neugarten, 1960) and increased rigidity (Schaie, 1958). Cumming et al. (1960) studied 211 individuals ranging in age from 50 to 90. Having derived an index of perceived life space from a questionnaire, Cumming et al. (1960) found that at the age of 65 there was an abrupt and significant increase in the proportion of older people who perceived constriction in their lives regardless of whether they were still working. Dean (1960) investigated the question of age changes in terms of feelings of control and mastery toward the environment. She reported a sharp decline in instrumental orientation with increasing age from 50 to 80, with the major shift occurring around age 60. In addition, after 70, there was an increasing preoccupation with complaints about an inability to control the environment. Factor analyzing the 16 Personality Factors (16PF), Sealy and Cattell (1965) found an increase in ego strength, an increase in introversion, and a decrease in anxiety, in a sample of individuals ranging in age from 16 to 70. The wide age range investigated in this study could account for the discrepancy of these findings with those of other investigators (Rosen & Neugarten, 1960; Byrd, 1959) who had found decreases in ego strength and increases in anxiety among older subjects. With a different emphasis, Aaronson (1958), using data from the Minnesota Multiphasic Personality Inventory (MMPI) Atlas, reported an increase in depression profiles and a decrease in psychopathic profiles with aging. This was interpreted as reflecting a trend toward increased internalization of symptoms. Coppinger, Bortner and Saucer (1963), in a study which controlled for psychopathology among older subjects, reported findings which suggested that with increasing age, there was an increase in denial, verbalized undefended discomfort and deviations in behavior control. This finding is consistent with other studies which have found changes in ability to handle impulses with aging (Neugarten, 1964). Bortner (1963) studied changes in id, ego and superego variables which were operationalized in a number of tasks presented to a group of individuals ranging in age from 30 to 70. The results of his study suggested that with age there was a decline in the overt acting-out of impulses, but an increase in fantasies of impulse gratification and an increase in awareness of opportunities offered by the environment for gratification. Fantasies of success and realistic achievements were found to decrease with increasing age.

The most widely quoted data about personality changes with age come from a series of studies conducted by Neugarten (1964) and others as part of the Kansas City Studies of Adult Life. These investigators studied a group of older individuals ranging in age from 53 to 90, using indepth clinical interviews and a wide range of tests including the Thematic Apperception Test (TAT). Defining "ego energy" as the ability to integrate wide ranges of stimuli, perceive and deal with complicated and conflictual situations, perceive affect as important in life, and be actively assertive, Rosen and Neugarten (1960) found a decrease in ego energy with increasing age, assessed from responses to TAT cards. In addition, there was an increase in preoccupation with one's inner life as age increased, and a decrease in emotional cathexes toward persons and objects in the environment (Neugarten & Gutmann, 1964). Gutmann (1964), using TAT protocols, observed that older individuals tended to see the environment as complex and dangerous, and themselves as conforming and accommodating to outer demands. In contrast, younger adults were found to perceive the environment as a source of reward for risk-taking, and themselves as able to take advantage of opportunities made available. On the basis of these data, a tentative conclusion was drawn that as one grows older, there is a shift away from active, realistic mastery to regressive, passive and magical modes of dealing with conflict (Gutmann, 1964). Of interest, however, was the observation that while there appeared to be clear changes with age in the above-mentioned intrapsychic processes or characteristics of individuals, other variables did not change (Neugarten, 1964). Socio-adaptive qualities of the personality which involved purposive, overtly-expressed, goal-directed characteristics of an individual were not correlated with age, for example. Rather, changes in these qualities seemed to be more related to environmental factors such as work status, health, financial resources and marital status, than to chronological age per se. Similarly, Garside, Kay and Roth (1965), comparing normal and disturbed adults, 65 years and older, found adjustment to be related to a number of factors among which were illness, isolation, income and socio-economic class, and an organic-functional factor. It appeared that chronological age was a significant factor with respect to intrapsychic changes, but that changes in overt socio-adaptational characteristics were a function of critical life events. The relationship between intrapsychic changes and socio-adaptational characteristics remains to be explored. Even so, it is difficult to determine which conclusions to draw concerning the intrapsychic changes reported above because of the use of cross-sectional design. The question remains open as to whether the observed changes actually represent valid age changes.

Studies of Individual Differences and Personality Types

An alternative approach to the study of personality change in old age has been the delineation of various patterns of adjustment achieved by older persons. This approach highlights the important issue of heterogeneity which exists among individuals in their patterns of aging. This issue is frequently overlooked in the single concept of "old age." When the personality data are approached from the point-of-view of individual differences, the results call into question the generalization which exists in the previously reported findings.

There have been two major attempts to identify personality types among older individuals. The first attempt was an extensive study by Reichard, Livson and Petersen (1962). The data used by these investigators were derived from an intensive clinical interview and a battery of psychological tests administered to a group of 87 men ranging in age from 55 to 84. The data were analyzed into five distinct clusters, each of which represented a distinct personality type and pattern of adjustment to aging.

Three of these types fell within a definition of well-adjusted, while the remaining two were classified as poorly-adjusted. The three well-adjusted patterns were labeled the mature men, the rocking-chair men, and the armored men. The mature group was characterized by an ability to handle impulses in a reasonable manner and with a high degree of ego integration. They enjoyed work, play and social relationships and had an intense interest in hobbies. Their cognitive processes were characterized by flexibility and realism. They engaged in warm, personal relationships and realistic self-appraisal. There was an acceptance of aging, and their ego integration was characterized by a state of integrity as defined by Erikson (1963). In contrast, the rocking-chair men tended to lean on others for material and emotional support. They were unambitious, and when retirement came, they welcomed it. This group of men closely fit Henry and Cumming's (1959) view of voluntary disengagement. These men were primarily characterized by dependent and passive personalities with a tendency to repress hostile impulses. They were moderately accepting of aging. The armored group, on the other hand, achieved a good adjustment to aging because of a heavy reliance on a smoothly functioning system of defenses. These individuals were characterized by considerable rigidity manifestated through an over-control of impulses. They had stable work histories, participated actively in organizations and planned ahead financially for old age. Although over-controlled, the nature of their defense system did not involve pathological forms of defense, but rather a counter-phobic orientation to life. In general, they were much less willing to look into themselves than the other two well-adjusted types (Reichard et al., 1962).

The two poorly-adjusted groups of men in this study consisted of the angry men and the self-haters. The angry men were generally hostile and blamed others for their lack of success. Their outlook was one of pessimism, although they were not overtly depressed. There was a poor adjustment to work characterized by emotional difficulties on the job. These men were not only extremely defensive, but their defenses were less adaptive than the armored group. They were generally highly anxious and saw themselves as unsuccessful. They fought against the idea of growing old. In contrast, the self-haters were characterized by obvious depression and self-depreciation. All of these men made many references to death, and suicidal ideation was clear in two cases. They were poorly-defended and turned their hostile impulses inward on themselves in masochistic, self-blaming tendencies. They were unable to come to terms with themselves as they were and death was seen as a longed-for release. Based on the histories of the men in the sample, the experimenters (Reichard et al., 1962) suggested that the personality characteristics of the men appeared to have changed very little throughout their lives. However, no conclusive statements could be made about the developmental pattern of these personality types because of the nature of this study. The difficulties with this study arose from the restricted sample which excluded women and the reliance on a cross-sectional design. Although this study provided important descriptive information about personality types among older individuals, the significant question about how these types evolved, changed or developed over time, and how they might continue to evolve and change with increasing age remained unanswered.

A similar attempt to organize the heterogeneity found among aging individuals was carried out by Neugarten, Crotty and Tobin (1964), using data gathered from the Kansas City Studies on Adult Life. In this study, both older men and older women were studied. The personality types were found to be significantly differentiated by a number of factors derived from the data. Six distinct patterns were found among the older men, and six distinct patterns were found among the older women. Although Neugarten, Crotty and Tobin (1964) intended to address themselves to the issue of changes in personality associated with chronological age, they employed a cross-sectional design with individuals ranging in age from 53 to 90. As a result, their data are descriptive of an outcome in adjustment at a particular point in time and not reflective of the process of adjustment. The personality types identified were similar in many ways to those described by Reichard et al. (1962). The six male types included the integrated men, the introspective men, the defended men, the passive-dependent men, the constricted men, and the unintegrated men. Only the group labeled the introspective men has no corresponding counterpart in the five types identified by Reichard et al. (1962). The six female types included the integrated women, the passive-dependent women, the defended-constricted women, the self-doubting women, the competitive women, and the unintegrated women. Although there were some differences in type between the men and women in the sample, it was found that the same factors significantly differentiated the personality types for both males and females. The most important factors which differentiated the integrated types from the unintegrated types, with the remaining types falling within a continum, were integrity, ego energy, cognitive competence and differentiated social perceptions. In addition, degree of adjustment, indicated by a rating of life satisfaction (Neugarten, Havighurst & Tobin, 1961; Tobin & Neugarten, 1961) was found to be significantly related to personality type. The unintegrated types achieved the lowest rating of adjustment and the integrated types achieved the highest rating of adjustment. The integrated individuals were characterized by a nondefensive and flexible capacity to adapt to stress of aging, by an identity which was well-integrated, and by an acceptance of impulses. In addition, they were able to focus on and integrate a wide variety of stimuli and maintain a certain detachment and objectivity in their thought processes. Their cognitive processes were characterized by purposeful use of thought and interest in ideas, with a strong component of instrumentality for males and of expressivity for females. Finally, there was a capacity to perceive differences among people and to make differentiated judgments about other people. There was an investment of energy and affect in social institutions and an outer-world orientation for men and fondness and capacity for close relationships with the opposite sex for women (Neugarten, Crotty & Tobin, 1964).

In contrast, the unintegrated individuals were characterized by anxiety, despair and depression, as well as by rigidity of defenses and overcontrol of impulse life. Their ego energy was characterized by perceptual and intellectual impairment, and listlessness in rational functioning. The behavior of females suggested a minimal degree of control over impulses and explosive reactivity. The unintegrated individuals had a higher degree of psychopathology, and the men in this group appeared to be poorer in health than the other groups of men.

The different types of adjustment identified by Neugarten et al. (1964), and described above, were found for both men and women across all age ranges studied.

Thus, there were no consistent relationships between chronological age and particular types of adjustment, whereas the group of cross-sectional studies mentioned earlier seemed to suggest that with increasing age there were characteristic changes in personality. These changes were in the direction of increased introversion, decreased ego energy and increased rigidity. The identification of individual differences among aging individuals argues for the view that these changes in personality, if in fact they represent changes, apply more aptly to certain individuals or patterns of adjustment than to others.

Present Study

The questions remain what changes in personality, if any, take place within the aging individual and how do changes which take place differ from one individual to another?

Recently, in response to a growing awareness of the limitations of a cross-sectional analysis in studying developmental changes, longitudinal and cross-sequential designs have been reported in the literature. Palmore (1968, 1970) has reported that a group of men ranging in age from 58 to 81 at the time of the first interview and assessed twelve years later, showed almost no overall reduction in activities or attitudes. Women in this sample had small but significant reductions in both activities and attitudes.

Nevertheless, these findings have been taken to support a view of continuity and consistency in behavior with the passage of time and increasing age. The view of continuity and consistency is in contrast to the view of intrapsychic change presented in the cross-sectional studies. Woodruff and Birren (1972) also found evidence supporting continuity in personality over a twenty-five year period. Their sample, however, did not extend longitudinally beyond the fourth decade of life and could not address itself to the issue of personality continuity or discontinuity in older individuals. Schaie and Strother (1968), employing a cross-sequential design, investigated the question of rigidity and found some decrements in personality-perceptual measures indicative of increased rigidity with increasing age. The decrement, however, was not as great as had been estimated previously from a cross-sectional comparison (Schaie, 1958). The personality-perceptual measures employed in this study involved tasks aimed at the acquisition of new and unfamiliar modes of interpersonal responding.

A descriptive longitudinal study to ascertain if, in fact, there is a phenomenon of change with age is needed prior to investigating mechanisms responsible for such personality changes. The literature has identified at least three important intrapsychic aspects of personality which might be significantly affected by increasing age: psychological rigidity, ego energy and interiority. Although largely conceived of as independent aspects of personality, these three variables interact with each other in potentially important ways. Psychological rigidity can be understood as an overcontrol of impulses or as a significant degree of defensiveness. Psychological rigidity is separate from organicity or feeblemindedness, but certainly in cases of organicity or feeblemindedness, it is an important component. Kurt Lewin (1935) has characterized rigidity as an absence of tension between boundaries of various spheres or aspects of personality and/or social field. As a result, changes in one sphere such as the social field do not elicit changes in another sphere such as the personality. The mode of responding becomes habitual, solidified and stereotyped. Differences in the stimulus situation, whether they be environmental or internal to the individual, are not discriminated as differences, at least in the functional sense of behavioral response flexibility. Kounin (1941) has specifically identified five aspects of psychological rigidity based on Lewin's discussion. Kounin (1941) states that "the older an individual, (1) the less effect a change of state in one region will have upon the state of neighboring regions. (2) The less likely he is to be in an overlapping situation. (3) The more difficulty he will have in the performance of a task which requires him to be influenced by more than one region. (4) The more likely is he to structure a new field which is perceptually ambiguous into a relatively large number of separate independent regions. (5) The less easily he can perform a task which requires that he restructures a given field" (pp. 270-271).

Whereas psychological rigidity primarily involves a drive-defensive orientation with a concommitant lack of adaptability, ego energy involves flexibility and adaptability, and relies on a strong cognitive component to achieve these characteristics. Ego-analysts have argued, for example, that there are certain conflict-free spheres of ego functioning which allow the individual to respond to incoming stimuli such as changes in the environment, and perform important syntheses and integrations with respect to these stimuli and changes so that effective behavioral interaction is achieved (Hartmann, 1964). Ego energy refers to the ability to integrate wide ranges of stimuli and, as such, to cope with complex conflictual situations. Schaie (1958) refers to ego energy as the capacity to cope with restraints of the field. Among other things, this involves being able to respond to a sequence of changing stimuli and events. Effectively coping requires ego energy and utilizes ego functions of synthesis and integration. Also involved is adequate control of energies and impulses (Last & Weiss, 1976).

When ego energy is diminished for either biological-organic or functional-psychological reasons, two alternative states of response are possible. The first is rigidity, where complex or conflictual stimuli are handled by denying and defending against the perception of their complexity. Integrative activity essentially ceases, but a status quo is maintained. That is, a simpler, stereotyped organization of response is preserved. The second alternative also involves the loss or cessation of integrative activity, but the use of the defense system to preserve some modicum of functioning is lost or greatly handicapped. The result is a lack of control of impulses resulting in impulsivity or emotional reactivity. In the Reichard et al. (1962) and Neugarten et al. (1964) studies, individuals who were classified as other than integrated were characterized by these two alternative response states. The second alternative was typically characteristic of the unintegrated individual and correlated with the lowest rating of adjustment (Neugarten, Crotty & Tobin, 1964).

In contrast to the first two aspects of intrapsychic life, a third aspect, interiority, refers to the increased saliency of inner life. Carl Jung (1954) observed that until middle age, an individual's psychic life was predominantly preoccuppied with an effort to actively master his environment. After having secured a position and identity for himself in relation to the outer world, however, the psychologically healthy individual in middle life and thereafter could increasingly turn his attention toward mastering and understanding his inner world. This represented an important step toward self-actualization. Consistent with these notions, interiority is seen as an increased saliency of inner life with a concommitant decrease in emotional cathexis toward people and objects in the external world. However, it is likely that the sequence of events and the positive significance of those events does not hold for all individuals. While there may be an increase in inward orientation for older individuals, this could take the form envisioned by Jung and be related to one's existential struggle and growth, or it could be less adaptative and more of an involuntary response of avoidance and withdrawal. Nevertheless, it seems likely that one characteristic of interiority would be a trend toward a passive rather than an active style of outwardly-expressed mastery of events and situations in the external world. Conceivably, interiority could be characterized by either ego energy and flexibility in one's approach to inner life, or by psychological rigidity impoverishing both the inner and outer worlds of the individual. One possible aspect of an inward orientation resulting in increased awareness of the inner self might be an increase in body awareness. Depending on the individual's cognitive and emotional resources, this could be either a positive or a negative response of the organism to itself.

Although Jung's view of interiority with increasing age undoubtedly is true for some individuals, the extent to which it is true for most aged individuals remains unexamined. Individuals who exemplify Jung's view could be expected to be characterized by low psychological rigidity and high ego energy which is turned inward to focus on psychic events which are allowed increased expression. Such individuals would likely be highly-integrated. An alternative pattern might possibly exist in a group of individuals who are aging. The alternative pattern, at the opposite end of a hypothesized continuum, would be one in which individuals react to aging with high rigidity and low ego energy. As a result, an inward orientation would be a defensive stance in an attempt to reduce input, cope with threat, and maintain a maximum level of adjustment in the face of stress and anxiety. An inward orientation in this situation would represent a by-product of rigidity and decreased ego energy.

It appears that the three aspects of psychological life discussed above interact in important and potentially differing ways among individuals. Many of the findings concerned with these three variables and reported to date in the literature need to be re-investigated in the context of a cross-sequential design (Schaie, 1970). This design provides unconfounded information about the relative contribution of ontogenetic (age) change and generational (cohort) change which could be obtained in the context of a longitudinal study. A design of this nature is required to answer the question whether the findings reported from cross-sectional studies represent actual age changes. Clarification of what represents actual age change is a fundamental prerequisite for any substantive research with development and adjustment in old age. The present study is designed to investigate the changes, if any, that take place intrapsychically as an individual grows old. On the basis of findings from the cross-sectional studies reviewed and the general trends obtained when longitudinal data were compared with cross-sectional data (Baltes & Nesselroade, 1972; Schaie & Strother, 1968), it is hypothesized that as an individual grows old, (1) there is an increase in psychological rigidity, (2) there is a decrease in ego energy, (3) there is an increase in interiority, and (4) the magnitude of these changes is less than their magnitude as estimated from cross-sectional paradigms.

CHAPTER II
METHOD

Subjects

This study was based on a panel of 256 older men and women in the North Carolina population which comprised the data base for the Duke Longitudinal Study. The original panel was chosen to reflect the age, sex, ethnic and socioeconomic characteristics of the older population in Durham and surrounding areas. In many ways, this panel has subsequently been found to be slightly above average in its educational and health characteristics (Palmore, 1968). For the present study, subjects were selected from this panel if they met two criteria. First, an individual had to survive the twelve-year duration of the Duke Longitudinal Study which spanned from approximately 1955 to 1967. Second, an individual had to have three complete Rorschach records representing three discrete occasions of testing which took place during the twelve-year period of the Duke Longitudinal Study. Seventy-eight subjects out of the original panel of 256 individuals fullfilled the two requirements. From this sample, a second sample of 35 subjects was randomly chosen for purposes of the present study. All of the subjects received the Rorschach inkblot test upon initially entering the Duke Longitudinal Study and at approximate intervals of 4 and 12 years thereafter. No Rorschach data were available on any individual in the Duke Longitudinal Study at an eight-year interval from time of entry into the study.

Subsequent analysis of the demographic characteristics of the randomly-chosen subsample which comprised the present investigation revealed that it closely approximated the larger sample of 78 subjects with respect to distribution among cohort groups. Table 1 presents an overview of the distribution of subjects by birth years, sex, race and I.Q..

Measurement Variables

Each subject received the Rorschach inkblot test at three times of measurement, yielding 105 individual Rorschach records. The 105 records were scored by a highly-trained judge in randomized order to eliminate any influence of the scoring process on the order of repeated measures. In addition, the Rorschach records were scored under blind conditions with respect to sex, age, time of testing and identity of subject. In order to obtain an estimate of inter-rater reliability, 30 Rorschach records were randomly selected from the total of 105 records and scored independently by a second highly-trained judge who was trained by Holt. These 30 records were similarly scored in randomized order under blind conditions.

TABLE 1

Distribution of Subjects by Birth Year, Sex, Race and I.Q.

Mean birth year	Sex		Race		I.Q. (1955)						
	Male	Female	White	Black	Retarded	Border-line	Dull-normal	Average	Bright-normal	Superior	Very superior
1881	3	6	4	5			6	1	2		
1885	4	4	6	2	1			3	2	1	1
1890	4	4	5	3			1	3	3	1	
1895	4	6	5	5	2		2	4	1		1

The Rorschach is not a test and, therefore, to approach it psychometrically, as if it should have the characteristics of a test, is to misunderstand the nature of the instrument. The Rorschach is increasingly viewed as a novel interview situation in which data are obtained about the manner in which an individual organizes his experience in a relatively standardized context (McArthur, 1972). It is a complex sampling of behavior to which scoring systems and/or systems of analysis may be applied. The most promising approaches to the Rorschach in recent years have involved various approaches of content analysis. In the present study, each Rorschach was scored twice by both judges using two approaches for scoring content.

The first approach was the application of Holt's Manual for the scoring of primary process manifestations in Rorschach responses (1970). Holt's revised system investigates the amount and type of primary process thinking in a given protocol and the effectiveness of attempts to integrate this material into appropriate and realistic responses (Holt, 1967). The measures yielded by this system appear to reflect somewhat stable aspects of an individual's cognitive style and capability, such as cognitive complexity (Schimek, 1974). Reliabilities of r=.78 and r=.88 have been reported for the scores derived using this approach (Holt, 1970). Thirty-one variables were derived on the basis of Holt's (1970) system.

Figure 1 presents a diagrammatic representation of the interrelationships among the various scores which yield ratings of Defense Demand, Defense Effectiveness and level of Adaptive Regression.

Defense demand is the degree to which the response content, and/or the manner in which the response is delivered requires the enlistment of ego defensive mechanisms to transform it into a socially-acceptable communication. Each response received a rating of Defense Demand, constituting a global judgement along a six-point scale. The ratings were summed and divided by the number of responses in a record to obtain an estimate of mean Defense Demand for that record. The scale ranged from a judgement of no apparent need for defense (rating = 1), through a judgement of moderate or considerable need for defense, to a judgement of the greatest need for defense (rating = 6).

Defense effectiveness is the degree to which anxiety associated with a response is effectively diminished or eliminated, and an adequate response to the inkblot is successfully produced. Each response received a rating of Defense Effectiveness along a six-point scale. The rating was arrived at by taking the form level of the response into consideration and adjusting that rating with respect to the quality of the defensive operations used and the amount of uncontained anxiety or dysphoria associated with the response. The ratings of Defense Effectiveness

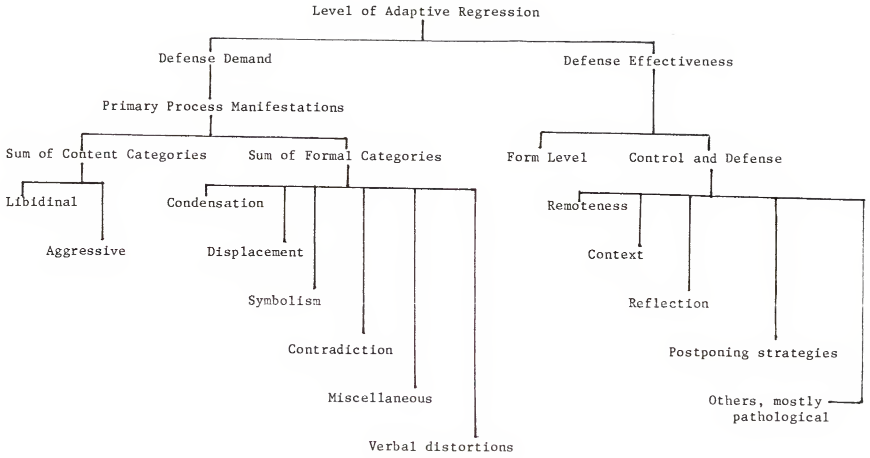

Figure 1. Outline of Holt's (1970) system for scoring primary process manifestations in Rorschach responses.

were summed and divided by the number of responses in a record to arrive at the mean Defense Effectiveness for that record.

A measure of adaptive versus maladaptive regression was derived in the present study by multiplying the Defense Demand of a response by the Defense Effectiveness of the same response. The resulting products of Defense Demand X Defense Effectiveness were then summed and divided by the total number of responses to obtain the mean level of Adaptive Regression for a given Rorschach performance. The possible range for these products was from -18 to +12.

The second approach to the Rorschach was the application of Fisher and Cleveland's (1958) Body-image boundary scoring system. In a comprehensive review of the reliability and validity of this system, Goldfried, Striker and Weiner (1971) concluded that the penetration scores which were derived from this scoring procedure did not hold up well. However, the barrier score did significantly relate to reliable and valid differences in exterior-versus-interior orientations towards one's body, and in modes of responding. Differences along an exterior-interior dimension in psychosomatic illness (Fisher & Cleveland, 1955), psychophysiological reactivity (Fisher & Cleveland, 1957), and psychological functioning were reliably differentiated by high versus low barrier scores (Goldfried et al., 1971). Test-retest reliabilities for the barrier score have been reported in the range of r=.88 and r=.90 (Goldfried et al., 1971). For the purposes of the present investigation, the barrier score appeared to be related to what Fisher and Cleveland (1956, 1958) have referred to as self-steering behavior. Self-steering behavior was originally described in terms of attributes such as high level of aspiration, need for task completion, outward expression of anger, orientation toward self-gratification, and mode of reaction to stress (Fisher & Cleveland, 1958). The validity data supported the view that high-barrier individuals were more mature in their ability to respond to a stressful situation, were more able to express anger outwardly, and were more oriented toward self-gratification (Goldfried et al., 1971). The remaining variable studied in the present research was the percent of barrier responses in a Rorschach record. The latter measure was used to control for the influence of response productivity on the barrier score which has reportedly been a significant confounding influence (Goldfried et al., 1971).

Hypothesis 1. Psychological rigidity, defined as an overcontrol of impulses, was assessed using the variable of mean Defense Demand. To the extent that psychological rigidity increases over time with age, as set forth in hypothesis 1, a decrease in mean Defense Demand was expected on the Rorschach.

Hypothesis 2. The mean level of Adaptive Regression is an estimate of an individual's ability to successfully respond to the complex demand characteristics of the Rorschach. It represented the operational definition of ego energy in the present study. Hypothesis 2 stated that ego energy decreases over time with age. Thus, decreases in mean level of Adaptive Regression over time would have confirmed the second hypothesis.

Hypothesis 3. Interiority is defined as an increased saliency of inner life with a concommitant decrease in orientation toward external accomplishment and ambition. It was evaluated in the present study by the percent of barrier responses given on the Rorschach. Hypothesis 3 stated that interiority increases over time with age. Thus, a significant decrease in the percent of barrier responses was expected on the Rorschach.

Hypothesis 4. Finally, hypothesis 4 stated that the magnitude of ontogenetic change assessed on the basis of longitudinal data is less than the magnitude estimated from cross-sectional paradigms. This hypothesis was evaluated by a comparison of cross-sectional and longitudinal age gradients for dependent variables.

Design and Data Analysis

The analysis of the data followed the general developmental model proposed by Schaie (1965, 1970) in which the relative contributions of age, generation and time of measurement are considered. Baltes and Nesselroade (1972) have pointed out that Schaie's model is overdetermined such that, of these three components which comprise total variance excluding error variance, only two can be separated mathematically in any sequential design, with the third determined. In the present study, data were available on individuals from four cohort groups (1881, 1885, 1890, 1895) at three occasions of measurement (1955, 1959, 1967). The advantage of repeated measures on the same individual allowed for a true estimate of ontogenetic change. In addition, data available at three times of measurement allowed the directionality and stability of the observed effects to be assessed, an advantage not available when only two occasions of measurement are sampled in a developmental study. Thus, to take advantage of the presence of repeated measures the data were analyzed in a cross-sequential design in which cohort and time of measurement were allowed to vary, while age was confounded. Time differences were treated as indicators of age change within cohorts, rather than as the result of cultural change. This decision was based on the assumption that the variables explored in this study represent more basic structures of personality and therefore are less likely the product of short-term cultural variation.

The cross-sequential design consisted of a 4 X 3 (Cohorts: 1881, 1885, 1890, 1895; and Times of Measurement: 1955, 1959, 1967) analysis of variance (ANOVA) with repeated measures for each of the thirty-three dependent variables

TABLE 2
Cross-Sequential Design

Mean birth year	Time of measurement		
	1955	1959	1967
1881	age 75-79	age 77-83	age 83-89
1885	age 70-74	age 75-79	age 80-84
1890	age 65-69	age 70-74	age 75-79
1895	age 60-64	age 65-69	age 70-74

(see Table 2). Table 3 presents the effects for cohort, time and Cohort X Time interaction which were derived from the Ss/Cohort X Time analysis of variance, and which represented relatively unconfounded estimates of the contribution of generation and ontogenetic components to pattern of change.

An assessment of the influence of sex on pattern of change in the dependent variables over time was made using a Ss/Sex X Time of Measurement analysis of variance with repeated measures. A separate analysis was carried out to avoid reducing cell size in the Ss/Cohort X Time cross-sequential analysis.

The influence of race on pattern of change over time in the dependent variables was similarly assessed using a Ss/Race X Time of Measurement analysis of variance with repeated measures.

The data derived from the repeated measures analysis were confounded by the influence of repeated exposure to the testing situation. Hence, an attempt was made to estimate the contribution of the sampling process to changes in performance over time. This estimate was made by organizing the data into a time-sequential design in which age and time of measurement were allowed to vary, with cohort confounded (see Tables 4 and 5). By allowing age to vary while cohort remained confounded, repeated measures likewise became confounded. The resulting data

TABLE 3
Cross-Sequential Design: ANOVA Table for
Ss/Cohort X Time

Between-Ss terms		
Between Groups	Cohort effect	Generational change
Between Ss/Groups	Error	
Within-Ss terms		
Trials	Time effect	Ontogenetic change
Groups X Trials	Cohort X Time interaction	
Ss/Groups X Trials	Error	

TABLE 4
Time-Sequential Design: 2 Age Level X 3 Time of Testing

Age level	Time of testing		
	1955	1959	1967
75+	1881 cohort	1885 cohort	1890 cohort
70-74	1885 cohort	1890 cohort	1895 cohort

TABLE 5
Time-Sequential Design: 3 Age Level X 2 Time of Testing

Age level	Time of testing	
	1955	1959
75+	1881 cohort	1885 cohort
70-74	1885 cohort	1890 cohort
65-69	1890 cohort	1895 cohort

were analyzed in a 2 X 3 (Age: 70-74, 75+; and Time of Measurement: 1955, 1959, 1967) two-way analysis of variance (see Table 4). Since complete data were also available for three age levels at two times of measurement, a 3 X 2 (Age: 65-69, 70-74, 75+; and Time of Measurement: 1955, 1959) two-way analysis of variance was performed to assess the influence of age differences across a wider range, albeit a shorter span of time (see Table 5).

Table 6 presents the ANOVA table for the time-sequential analyses of variance, depicting the effects of age, time of testing, and Age X Time of Testing interaction. The time-sequential analysis did not represent an independent estimate of the contribution of age and testing effects to patterns of change in the present study. Rather, it served as an adjunct to the interpretation of change due to cohort and time in the cross-sequential design, by providing a comparison of effects when age and time of testing were emphasized in the organization of the data.

TABLE 6
Time-Sequential Design: ANOVA for
Age X Time of Measurement Analysis of Variance

Groups	Age effect	Age differences
Trials	Time of testing effect	Cultural change
Groups X Trials	Age X Time of testing	
Residual	Error	

CHAPTER III
RESULTS

Rater Reliability

Table 7 represents the results of the assessment of inter-rater reliability, based on a random sample of the Rorschachs scored in the present research. A statistically significant ($p < .05$) level of agreement between the two raters was obtained for twenty-nine out of thirty-three variables which comprised the scoring systems in this study, with correlation coefficients predominantly falling within the range of $r=.70$ to $r=.99$, $p < .005$. Three of the six individual categories which represented formal manifestations of primary process thinking had coefficients of correlation between the two raters which did not achieve significance. These three categories were displacement, symbolism and verbal distortions, all of which represented categories in the scoring system associated with low frequencies of occurrence in the Rorschach protocols. The remaining score for which there was insignificant inter-rater reliability was the mean level of creativity of performance on the Rorschach.

Sex

The relationship between pattern of change over time and sex was studied using a Ss/Sex X Time of Measurement

TABLE 7

Correlation Coefficients for Inter-Rater Reliability

Variable	r
Response productivity	.99 ***
Sum of content categories	.87 ***
Libidinal content	.78 ***
Aggressive content	.89 ***
Sum of formal categories	.62 ***
Condensation	.58 ***
Displacement	-.08
Symbolism	-.06
Contradiction	.70 ***
Miscellaneous	.67 ***
Verbal distortions	-.03
Mean form level	.81 ***
Mean creativity	-.10
Mean Defense Demand	.75 ***
Mean Defense Effectiveness	.71 ***
Mean Adaptive Regression	.72 ***
Number of responses - content, level one	.38 *
Number of responses - content, level two	.88 ***
Number of responses - content-related material	.92 ***
Number of responses - formal, level one	.67 ***
Number of responses - formal, level two	.65 ***
Number of responses - formal material	.68 ***
Number of responses - level one material	.70 ***
Number of responses - level two material	.84 ***
Number of responses with primary process thinking	.90 ***
Amount of primary process material, weighted	.91 ***
Percent of content primary process	.68 ***
Percent of formal primary process	.75 ***
Percent of primary process material	.80 ***
Percent of level one material	.77 ***
Percent of level two material	.51 ***
Number of barrier responses	.78 ***
Percent of barrier responses	.68 ***

Note.-df=29

* $p<.05$

** $p<.01$

*** $p<.005$

analysis of variance. Table 8 presents the F ratios obtained. No significant differences were found between males and females in performance on the variables studied. In addition, pattern of change over time in the dependent variables was not differentially influenced by sex of the subject. As a result, the data presented in Figures 2 through 31, depicting cross-sectional and longitudinal age gradients, were based on all subjects combined.

Race

The relationship between pattern of change over time and race was similarly studied using a Ss/Race X Time of Measurement analysis of variance. Table 9 presents the F ratios found. With three exceptions, black and white subjects did not differ significantly in their performance on the variables in the present study. In addition, pattern of change over time did not significantly differ with respect to race. The exceptions noted included a significant race effect ($p<.05$) for response productivity. In general, black subjects (mean number of responses = 15) were less productive than white subjects (mean number of responses = 19). However, the magnitude of the F ratio for the Race X Cohort interaction effect did not reach significance ($F(3,27)=0.92$).

Table 9 shows a significant Race X Time effect ($<.05$) for the amount of condensation on the Rorschach, and a significant Race X Time effect ($p<.05$) for amount of verbal

TABLE 8
Ss/Sex X Time of Measurement Analysis of Variance with Repeated Measures: Significant F Ratios

Variable	Sex	Sex X Time
Response productivity	0.47	0.66
Sum of content categories	0.31	1.08
Libidinal content	0.75	0.43
Aggressive content	0.09	1.18
Sum of formal categories	0.03	0.67
Condensation	1.53	2.13
Displacement	2.25	0.90
Symbolism	0.50	0.48
Contradiction	0.57	0.81
Miscellaneous	2.24	0.81
Verbal distortions	3.46	0.67
Mean form level	1.00	0.52
Mean creativity	0.59	0.19
Mean Defense Demand	0.16	0.36
Mean Defense Effectiveness	1.01	0.31
Mean Adaptive Regression	1.99	0.42
Number of responses - content, level one	0.60	1.03
Number of responses - content, level two	0.14	2.77
Number of responses - content-related material	0.20	1.62
Number of responses - formal, level one	0.12	0.53
Number of responses - formal, level two	1.11	0.70
Number of responses - formal material	0.04	0.60
Number of responses - level one material	0.30	0.05
Number of responses - level two material	0.01	1.90
Number of responses with primary process thinking	0.01	1.28
Amount of primary process material, weighted	0.00	1.20
Percent of content primary process	1.53	0.41
Percent of formal primary process	0.17	0.13
Percent of primary process material	1.16	0.71
Percent of level one material	0.74	0.27
Percent of level two material	1.43	1.05
Number of barrier responses	0.01	1.46
Percent of barrier responses	0.33	1.34

Note.-df=1,33. df=2,66.
* $p<.05$
** $p<.01$
*** $p<.001$

TABLE 9
Ss/Race X Time of Measurement Analysis of Variance with Repeated Measures: Significant F Ratios

Variable	Race	Race X Time
Response productivity	5.26 *	0.22
Sum of content categories	1.93	2.21
Libidinal content	0.45	2.29
Aggressive content	3.09	1.15
Sum of formal categories	0.57	0.79
Condensation	0.58	4.32 *
Displacement	0.13	0.18
Symbolism	0.19	1.15
Contradiction	0.34	0.87
Miscellaneous	0.34	0.85
Verbal distortions	0.46	3.71 *
Mean form level	3.17	0.16
Mean creativity	0.72	0.10
Mean Defense Demand	1.76	0.80
Mean Defense Effectiveness	2.25	0.97
Mean Adaptive Regression	1.64	0.54
Number of responses - content, level one	0.00	2.87
Number of responses - content, level two	3.57	1.15
Number of responses - content-related material	3.12	2.33
Number of responses - formal, level one	0.32	0.45
Number of responses - formal, level two	1.14	3.15
Number of responses - formal material	1.44	0.87
Number of responses - level one material	0.34	0.47
Number of responses - level two material	3.41	1.64
Number of responses with primary process thinking	3.42	0.94
Amount of primary process material, weighted	2.94	1.67
Percent of content primary process	0.27	2.08
Percent of formal primary process	0.07	0.66
Percent of primary process material	0.06	1.47
Percent of level one material	0.18	0.03
Percent of level two material	0.10	1.19
Number of barrier responses	1.77	2.66
Percent of barrier responses	0.26	2.91

Note.-df=1,33. df=2,66.
* p<.05
** p<.01
*** p<.001

distortion given. White subjects tended to produce more condensation responses over time, while black subjects remained essentially unchanged in their performance over time in this category. Nevertheless, the magnitude of the F ratio for the Race X Cohort interaction effect (F(3,27)=0.49) did not reach significance. With respect to amount of verbal distortion given, white subjects showed a marked decline in production at the second time of measurement, while black subjects remained essentially unchanged at the same point in time. Once again, the magnitude of the F ratio for Race X Cohort (F(3,27)=0.06) did not reach significance. Consequently, the data presented in Figures 2 through 31 were based on all subjects combined.

Hypothesis 1

Hypothesis 1 states that psychological rigidity increases over time. The variable of mean Defense Demand tests this hypothesis.

Mean Defense Demand

Defense Demand is the degree to which the response content, and/or the manner in which the response is delivered, require the enlistment of ego defensive mechanisms to transform it into a socially-acceptable communication.

Table 10 presents the results of the cross-sequential and time-sequential analyses of variance for mean Defense

TABLE 10
Levels of Significance in the Cross-Sequential and Time-Sequential Analyses of Mean Defense Demand

Type of analysis	Effect	Change component	p <
Cross-sequential	Cohort	Generational	n.s.
	Time	Ontogenetic	n.s.
	Cohort X Time		n.s.
Time-sequential	Age (2 levels)	Age differences	n.s.
	Time of testing (3 occasions)	Cultural	n.s.
	Age X Time		n.s.
Time-sequential	Age (3 levels)	Age differences	n.s.
	Time of testing (2 occasions)	Cultural	n.s.
	Age X Time		n.s.

Demand. No significant cohort, time, age or time of testing effects were found. In addition, no significant interaction effects were found. Thus, mean level of Defense Demand characterizing the Rorschach protocols of subjects appeared to be unaffected by differences in cohort, age or time of testing. Additionally, the mean level of Defense Demand did not significantly change over time, and this was true for subjects regardless of cohort affiliation or age at time of testing.

Figure 2 represents the cross-sectional age gradients for mean Defense Demand. Younger and older cohorts were similarly characterized by a slight-to-moderate need for defense at each time of testing. A slight-to-moderate need for defense also consistently characterized the pattern of performance for subjects over time, as seen in Figure 3.

Hypothesis 2

Hypothesis 2 states that ego energy decreases over time. Mean level of Adaptive Regression tests this hypothesis.

Mean Level of Adaptive Regression

Adaptive regression refers to the ability to effectively access primary process material in the aim of successfully responding to a complex situation with a sufficient degree of enrichment and flexibility.

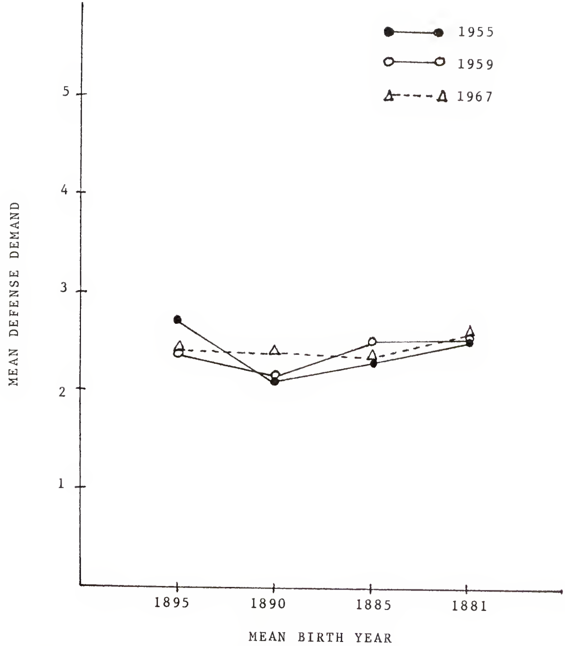

Figure 2. Cross-sectional age gradients for mean Defense Demand of Rorschach performance.

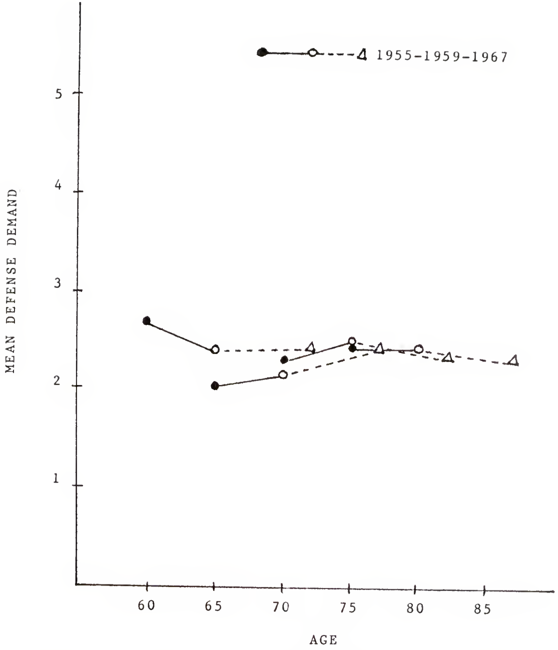

Figure 3. Longitudinal age gradients for mean Defense Demand of Rorschach performance.

Table 11 presents the results of the cross-sequential and time-sequential analyses for mean level of Adaptive Regression. The results indicated that there was no significant change in the mean level of Adaptive Regression due to what appeared to be cohort affiliation, the passage of time, age or time of testing.

Figures 4 and 5 present the cross-sectional and longitudinal age gradients, respectively. The Rorschach performances of younger and older cohorts were characterized by only moderate levels of Adaptive Regression at each time of testing. Likewise, subjects, regardless of cohort affiliation, maintained moderate levels of Adaptive Regression over time.

Hypothesis 3

Hypothesis 3 states that interiority increases over time. The percent of barrier responses on the Rorschach tests this hypothesis.

Barrier Responses

Table 12 presents the cross-sequential and time-sequential analyses for percent of barrier responses. No significant cohort effect was found. In contrast, a significant time effect ($F(2,62)=8.37$, $p < .001$) and a somewhat smaller but significant time of testing effect ($F(2,35)=5.48$, $p < .01$) were found in the cross-sequential and time-sequential analyses, respectively.

TABLE 11
Levels of Significance in the Cross-Sequential and Time-Sequential Analyses of Mean Level of Adaptive Regression

Type of analysis	Effect	Change component	p <
Cross-sequential	Cohort	Generational	n.s.
	Time	Ontogenetic	n.s.
	Cohort X Time		n.s.
Time-sequential	Age (2 levels)	Age differences	n.s.
	Time of testing (3 occasions)	Cultural	n.s.
	Age X Time		n.s.
Time-sequential	Age (3 levels)	Age differences	n.s.
	Time of testing (2 occasions)	Cultural	n.s.
	Age X Time		n.s.

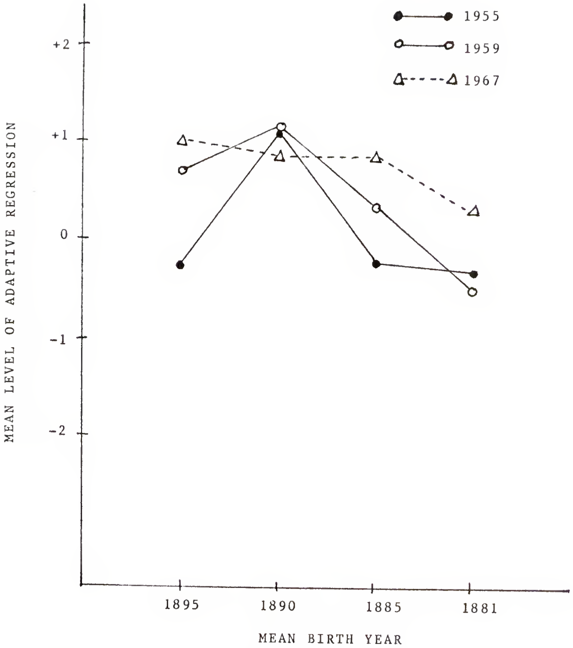

Figure 4. Cross-sectional age gradients for mean level of Adaptive Regression of Rorschach performance.

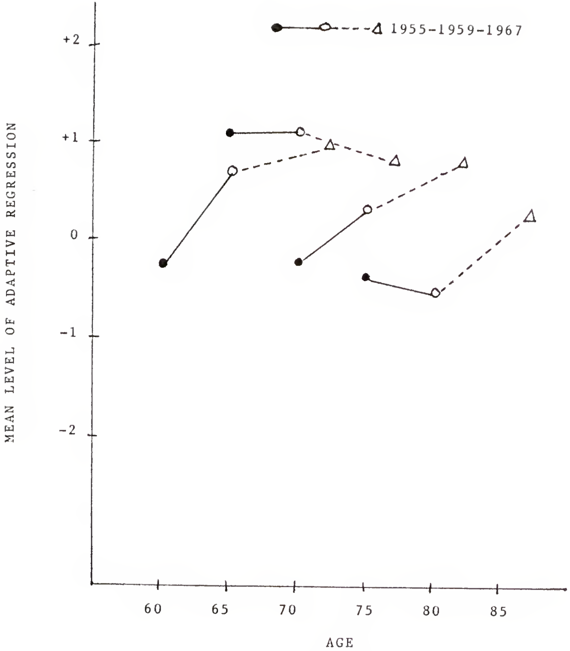

Figure 5.. Longitudinal age gradients for mean level of Adaptive Regression of Rorschach performance.

TABLE 12
Levels of Significance in the Cross-Sequential and Time-Sequential Analyses of Percent of Barrier Responses

Type of analysis	Effect	Change component	p <
Cross-sequential	Cohort	Generational	n.s.
	Time	Ontogenetic	.001
	Cohort X Time		n.s.
Time-sequential	Age (2 levels)	Age differences	n.s.
	Time of testing (3 occasions)	Cultural	.01
	Age X Time		n.s.
Time-sequential	Age (3 levels)	Age differences	n.s.
	Time of testing (2 occasions)	Cultural	n.s.
	Age X Time		n.s.

Figures 6 and 7 present the relevant cross-sectional and longitudinal age gradients for percent of barrier responses, respectively. A significant increase in percent of barrier responses on the Rorschach was observed for subjects over time, regardless of cohort affiliation (see Figure 7). Younger and older cohorts did not appear to significantly differ in percent of barrier responses when compared at each of three times of measurement (see Figure 6). Finally, no significant Cohort X Time interaction effect was found, indicating that the pattern of change over time was not cohort-specific (see Table 12).

Hypothesis 4

Hypothesis 4 states that the magnitude of change estimated from longitudinal data is less than the magnitude of change estimated from cross-sectional data. An evaluation of the possible discrepancies between cross-sectional and longitudinal data for the explication of components to change is important for a clarification of previous findings in the literature. A comparison of cross-sectional and longitudinal age gradients tests this hypothesis.

Cross-Sectional versus Longitudinal Age Gradients

Comparisons of cross-sectional and longitudinal (i.e., within-cohort) age gradients have been presented in Figures 2 through 7 for each of the relevant dependent variables. No significant cohort effects were found for the variables discussed.

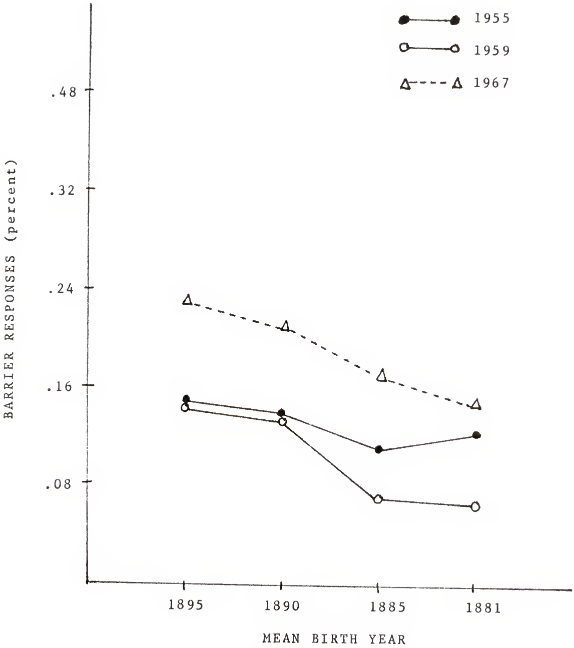

Figure 6,. Cross-sectional age gradients for percent of barrier responses found on the Rorschach.

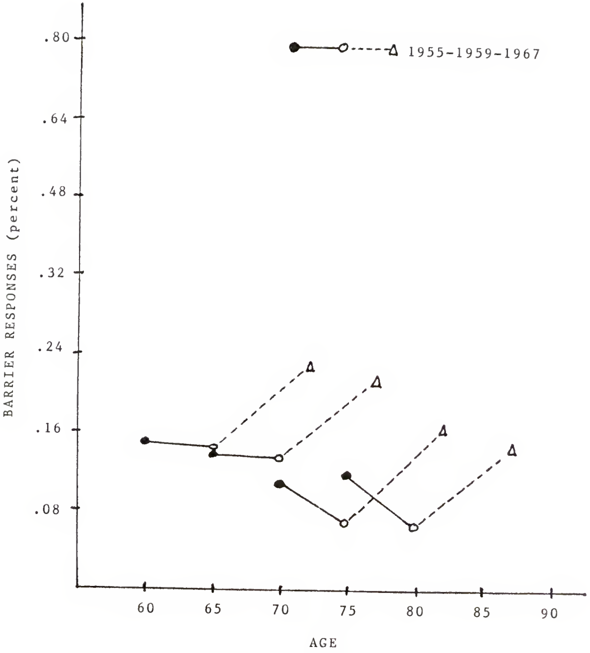

Figure 7.. Longitudinal age gradients for percent of barrier responses found on the Rorschach.

In addition, no significant time effects were found, with the single exception of percent of barrier responses. Thus, there were no significant differences found in the comparison of longitudinal and cross-sectional age gradients for two out of the three dependent measures in this study.

With respect to the single exception the longitudinal estimate of age change for percent of barrier responses was discrepant from the cross-sectional estimate of age differences between cohorts. In the latter case, no significant differences were found in contrast to the finding of a significant increase in percent of barrier responses over time. Thus, not only was a decrease in performance over time not found, but improving performance on this measure was demonstrated in contrast to the cross-sectional finding which suggested no differences in performance between younger and older cohorts.

CHAPTER IV
DISCUSSION

The present study investigated whether change occurs in personality as the individual ages. The goal was to study the process of normal aging in a group of subjects who were in their late adult years. An attempt, therefore, was made to eliminate confounding effects of serious debilitating disease and/or death on the normal process of aging (Edwards & Wine, 1963; Lieberman, 1965; Riegel & Riegel, 1972; Riegel, Riegel & Meyer, 1967) by selecting subjects who survived the duration of more than a decade from the time they initially entered the study. Thus, the sample upon which the results of this study were based represented a select group of subjects characterized by longevity. Within this context, the results indicated that changes do take place in specific modes of responding, but that more enduring aspects of the personality such as quality of impulse life, effectiveness of ego control and level of cognitive complexity remain stable.

Much debate has existed in the literature concerning whether a discrete developmental change occurred around the age of 60 resulting in distinct personality changes with respect to shifting ego energy and increased inward orientation (Henry & Cumming, 1959). This particular debate was believed to have been resolved in favor of a view of consistency in personality functioning, based on the results of studies which looked at behavioral indices and social adjustment scales (Tobin & Neugarten, 1961; Havighurst, 1968; Palmore, 1968). The results of the present study support this conclusion of consistency in personality functioning, but represent an improvement on the data base for such a conclusion. The consistency found in personality functioning was based in the present study on a systematic and thorough investigation of intra-psychic variables which directly focus on the manner in which an individual organizes his experience.

Woodruff and Birren (1972) also arrived at a conclusion of consistency in personality functioning using a longitudinal research paradigm. The results of their study were among the few which paralleled the pattern of slight, if any, decline in functioning found in the more substantial longitudinal literature on cognitive variables. The major drawback to their study, however, was its limited applicability to the older age range since their sample of subjects ranged from a mean age of 19.5 to a mean age of 44.5. The results of the present study not only support the conclusion of limited decline in personality functioning, but have direct application to the older age range from 60 to 90 about which there occurred earlier debate in the literature. This age range has been relatively neglected in the literature with respect to the direct study of longitudinal personality change.

Personality variables most often described in the literature with respect to age change among older individuals have included the variables of psychological rigidity, ego energy and interiority. In the present study, it was hypothesized that psychological rigidity would increase with age, based on findings from cross-sectional studies previously reported. This hypothesis was not supported by the results. This conclusion is supported by analysis of patterns of change associated with mean Defense Demand, which was found to remain stable for individuals over time. Thus, an increasing overcontrol of impulse life associated with increased psychological rigidity was not supported.

It was further hypothesized that a decrease in ego energy would be found. The results did not confirm this hypothesis. The mean level of Adaptive Regression was found to remain stable for subjects over time. Thus, individuals remain consistent with respect to the level of cognitive complexity which characterizes their Rorschach performance over time.

It was also hypothesized that an increase in interiority would be found among older individuals as they age. Interiority was measured in terms of the percent of barrier responses found on the Rorschach. The hypothesis that interiority increases with age was not confirmed by the results. In particular, the percent of barrier responses on the Rorschach was found not to decline over time, but to significantly increase. This suggests that older individuals may exhibit an increased orientation toward mastery or what Fisher and Cleveland (1958) referred to as self-steering behavior, over time. A significant time of testing effect based on the time-sequential analysis, in the absence of a signiticant cohort effect, suggests that the increased orientation toward mastery of an external situation occurs with what appears to be increased familiarity with the testing situation.

Finally, it was hypothesized that the magnitude of change estimated from longitudinal data would be less than the magnitude of change estimated from cross-sectional data. This hypothesis was based on earlier findings in the literature which demonstrated smaller declines in functioning assessed longitudinally, than seen in cross-sectional paradigms. In the present study, there were no significant differences between the cross-sectional and longitudinal age gradients for two out of the three dependent measures.

An interesting finding was the discrepancy seen between the cross-sectional and longitudinal age gradients for percent of barrier responses on the Rorschach. Percent of barrier responses on the Rorschach represented the operational definition of interiority. Whereas earlier studies reported increases in interiority with age, the result of the present study suggests increases in an orientation toward external mastery over time. In contrast, there were no significant differences found between younger and older cohorts on this measure. To the extent that cohort and time are both confounded with age, a pure age model does not appear to account for the changes seen in interiority. One possibility suggested by the results is that Rorschach performance reflected in percent of barrier responses may be importantly influenced by repeated exposure to the testing. Finally, the conclusion to be drawn that there is an increased orientation toward external mastery over time among older individuals may be a finding particular to a group of highly-select aged subjects characterized by relative physical health and longevity such as were studied in this investigation.

A major qualification of the present study was the use of a small sample size upon which the analyses were conducted. No significant differences were found in mean defense demand or mean level of adaptive repression over time or between younger and older cohorts. The possibility that significant underlying trends exist in these variables associated with age, but were not found due to the small sample studied, must be considered.

The absence of any noticeable trends in the present data, however, suggests that the strength of these findings might hold up if larger samples of older individuals were employed.

The complexity of the question what constitutes actual age change is apparent. The necessity of approaching this question in future studies by an assessment of the multiple components to change using cross-sequential strategies is made clear.

Finally, the results of this study must be qualified on the basis of the highly-select sample studied. Only individuals who survived a duration of twelve years in the Duke Longitudinal Study were included. The earlier findings in the literature of increased psychological rigidity, decreased ego energy and increased interiority with age are not supported for this select group of individuals. Nevertheless, it may be that in instances of declining physical health and/or nearness to death, the findings discussed here may not apply. The question whether consistency in personality functioning is maintained, along the dimensions of psychological rigidity, ego energy and interiority, in association with physical illness and impending death would help clarify the significance of the findings of this study as a description of the normal aging process.

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BIOGRAPHICAL SKETCH

Corinne Frantz Fox was born in New York in 1951 and was educated in a British school in the far east, as well as schools in Florida and Louisiana. She graduated *summa cum laude* from Newcomb College of Tulane University, New Orleans, Louisiana, in 1972 with honors in psychology and a double major in German. Her graduate education was undertaken in 1972 in the Department of Clinical Psychology, College of Liberal Arts and Sciences at the University of Florida. In March 1974, she conjointly published a textbook for introductory psychology entitled *Investigating the riddle of man*, Prentice-Hall. She received the degree of master of science in December 1974. In March 1975, she was awarded the Florence Schafer Memorial Award for psychotherapeutic excellence by the faculty and students of the Department of Clinical Psychology. From July 1976 through June 1978, she completed one year of predoctoral internship training and a second year of advanced clinical training at Yale University, New Haven, Connecticut.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Jacquelin Goldman

Jacquelin Goldman, Chairman
Professor of Clinical Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Louis D Cohen

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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